

ABSTRACT

Systems, apparatuses and methods for cell isolation and analysis. Cells are introduced into a dielectrophoretic prefilter including one or more trapping electrodes configured to trap at least a portion of the cells with a dielectrophoretic force. The cells trapped from the prefilter are directed into a dielectrophoretic field-flow fractionation separator coupled to the prefilter. The cells are discriminated by balancing a dielectrophoretic force (and optionally a magnetophoretic force) with a gravitational force to displace the cells to positions within a velocity profile in the separator. At least a portion of the cells are trapped as a function of the cells' time of emergence from the separator with two or more spiral electrode segments coupled to the separator.

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